Discussion of Ferrara, Mueller, Viswanath-Natraj and Wang

"Central Bank Swap Lines: Micro-Level Evidence"

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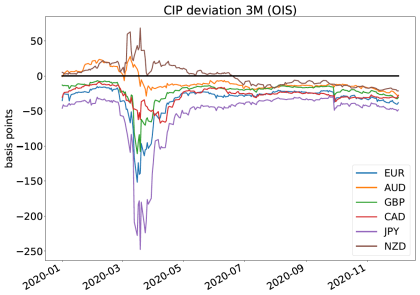
This paper

- Motivation: The impact of central bank swap lines in March 2020.
- Unique Data:
  - Dealer-level drawings on dollar repos from the BOE.
  - Dealer-level trades of FX forwards and FX swaps.
- Findings:
  - In aggregate, central bank swap lines in March 2020 led to lower ceilings on CIP deviations and reductions in forward rate volatility.
  - Dealers with access to the swap line reduced pricing inefficiencies:
    - ⋆ They charged lower forward premia.
    - ⋆ They had a larger decline in dispersion of quotes.
    - ⋆ They reduced gross FX exposures and increased net supply of dollars to non-financial institutions.

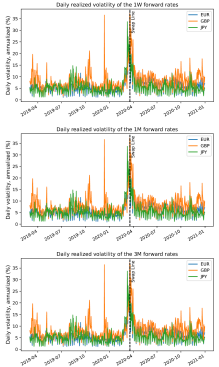
Aggregate Results

Figure 5: CIP Deviations during Covid: Ceiling Tests



CIP Deviation

Figure 7: Forward Rate Volatility: 1 Week, 1 Month and 3 Month



Forward Rate Volatility

CIP Ceiling: $\delta + i_{\text{interbank}} - i_{\text{reserve}}$

Cross-Dealer Results on CIP Deviations

Table 5: Transaction-Level CIP Deviations for EUR/USD, GBP/USD and JPY/USD:twc paired t-tests

Date	Currency	Control CIP	Treatment CIP	N	p-val (t test)
17 March 2020	EUR	-145.95	-133.93	274	0.178
17 March 2020	GBP	-111.07	-124.05	187	0.383
17 March 2020	JPY	-224.69	-190.88	145	0.160
18 March 2020	EUR	-91.07	-118.19	309	0.009***
18 March 2020	GBP	-99.08	-105.31	173	0.653
18 March 2020	JPY	-149.64	-160.60	185	0.432
19 March 2020	EUR	-159.32	-167.10	260	0.566
19 March 2020	GBP	-152.78	-125.71	160	0.128
19 March 2020	JPY	-239.21	-215.40	147	0.143
20 March 2020	EUR	-95.15	-113.43	161	0.080*
20 March 2020	GBP	-172.94	-86.35	125	0.000***
20 March 2020	JPY	-192.50	-204.05	154	0.433

Table 6: Transaction-Level CIP Deviations for EUR/USD, GBP/USD and JPY/USD: All counterparties

	I	II	III	IV
	Panel	EUR 3M	GBP 3M	JPY 3M
$D_{treat} \times D_{03/18}$	-27.3376*	-29.2257**	-4.6552	-8.9691
	(10.8271)	(5.7671)	(18.1059)	(7.2881)
$D_{treat} \times D_{03/19}$	-3.3794	-13.1570**	46.1210*	28.5460**
	(6.7608)	(3.6286)	(16.3555)	(8.9291)
$D_{treat} \times D_{03/20}$	-18.7965	-20.5335*	67.3384	-5.3686
	(11.0745)	(7.9440)	(31.5169)	(2.8132)
constant	-132.5710***	-118.4106***	-134.5626***	-193.5048***
	(5.1419)	(3.0842)	(9.6533)	(0.0548)
R-sq	0.138	0.190	0.201	0.252
N	2272	992	644	630

- Would like to see the pre result as a placebo. Why move the diff-in-diff tests to the Appendix?
- Did you use the intraday market prices to calculate the transaction level CIP deviations?
- Results stronger for GBP/USD. Makes sense as the treatment are dealers with access to BOE repos.

Cross-Dealer Results on FX Exposures

Table 9: FX exposures to commercial bank and non-financial counterparties: Dynamic DiD

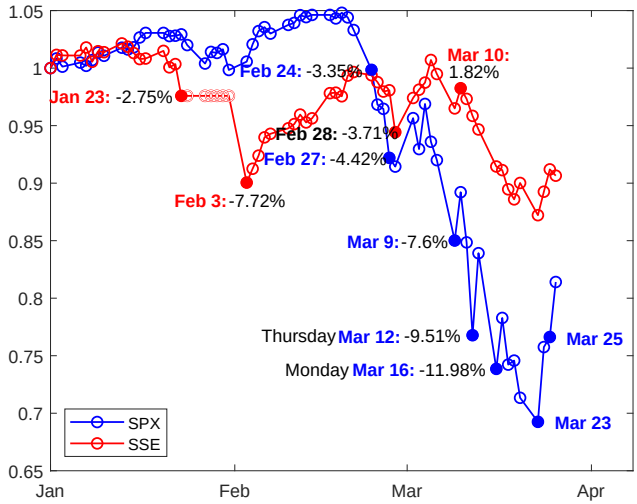
	I	II	III	IV	V	VI
	Commercial			Non-Financial		
	Buy	Sell	Gap	Buy	Sell	Gap
treat	2583.9910**	2983.3013**	-399.3104*	90.6422*	54.8618**	35.7804
	(1150.3371)	(1343.3897)	(235.3335)	(44.9004)	(21.8878)	(36.7983)
$D_{\text{swap line}} \times 1[k=-1]$	314.7323	505.5828	-190.8505	-36.0080*	-12.0735	-23.9345
	(335.2548)	(309.2042)	(135.1873)	(18.5134)	(17.8561)	(21.7688)
$D_{\text{swap line}} \times 1[k=-2]$	735.7680**	745.3405***	-9.5724	11.2730	13.6964	-2.4234
	(301.9277)	(222.8113)	(130.1639)	(37.6134)	(13.8690)	(35.4374)
$D_{\text{swap line}} \times 1[k=1]$	-11.5340	-75.5659	64.0319	-72.9412*	-21.9462	-50.9950*
	(117.9548)	(85.7398)	(96.4346)	(37.8376)	(14.4746)	(26.4621)
$D_{\text{swap line}} \times 1[k=2]$	-256.8731**	-166.1433	-90.7297	-82.5067**	-5.5892	-76.9175*
	(128.2094)	(156.2420)	(144.9236)	(40.6285)	(20.3375)	(37.9495)
$D_{\text{swap line}} \times 1[k=3]$	-518.1804**	-487.6885*	-30.4919	-33.9092	18.0683	-51.9775*
	(214.4721)	(251.1161)	(128.1063)	(25.9595)	(22.1127)	(29.9997)
$D_{\text{swap line}} \times 1[k=4]$	-239.4202	-369.2281	129.8079	-49.8039	5.4649	-55.3588
	(174.7663)	(226.8223)	(153.4487)	(34.2678)	(14.5239)	(37.2695)
$D_{\text{swap line}} \times 1[k=5]$	-110.7589	-247.0298	136.2710	-82.2852	-17.6406	-64.6446
	(177.0615)	(156.8038)	(128.4781)	(54.1217)	(21.9575)	(43.5474)
$D_{\text{swap line}} \times 1[k=6]$	-476.2818**	-340.6283*	-135.6535	-33.5881	-17.3315	-16.2566
	(209.6168)	(187.2462)	(152.4682)	(25.0198)	(13.7112)	(29.4767)
$\frac{RWA}{Assets}$	5677.1363**	5776.9073*	-99.7710	282.8262	352.7197*	-69.8935
	(2662.3858)	(3113.7863)	(702.6401)	(177.7417)	(181.0148)	(60.9526)
$\text{distance}_{\text{CET1 Ratio}}$	1.0129	-90.3774	91.3903	10.0026	13.7918	-3.7891
	(57.0977)	(79.9365)	(61.8613)	(7.9089)	(8.3461)	(2.2538)
$\text{distance}_{\text{Leverage Ratio}}$	-419.0007	-523.4127	104.4119*	-3.7412	-21.4347**	17.6935**
	(372.9458)	(403.6330)	(59.4747)	(4.9480)	(7.9755)	(7.7180)
constant	-629.7708	446.8559	-1076.6267**	-105.4800	-167.0805	61.6005
	(1227.8809)	(929.4058)	(444.8840)	(164.4475)	(144.9438)	(36.6733)
R2	0.414	0.381	0.140	0.315	0.291	0.352
N	12806	12806	12806	2002	2002	2002

- $D_{\text{swap line}}$ should be D_{treat}.
- Do you have time fixed effect? Otherwise, the month dummies should be included.
- For March (k=1), the net for the non-financials is negative and significant. Demanding less dollars from non-financials?
- The reduced FX exposures against commercial banks most significant in April, May, and then August?

My Comments and Observations

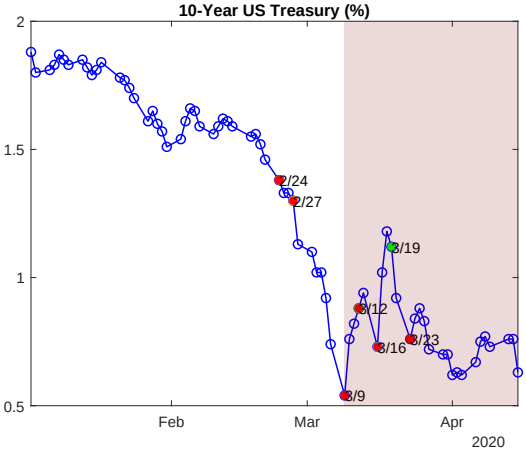
- The impact of the swap line on the CIP deviation can be further explored, both in aggregate and across dealers:
  - Focus on March 2020 with higher frequency.
  - Micro-level: the evidence and the channel can be further connected.
- The cross-dealer variation (with/without access to the swap line):
  - CIP deviation: weak results, stronger for GBP. Endogeneity is an issue.
  - Reduced FX exposure against the commercial banks occur much later in April and May.
  - Reduced net demand for dollar against non-financials: how to interpret?
- The reduction of the intra-day volatility in the 3M forward rates:
  - An interesting and important question to ask. A direct result of the swap line?
- The explosion of the cross-currency basis is just as interesting, if not more, as it reflects the intermediary constraints amidst market turmoil.

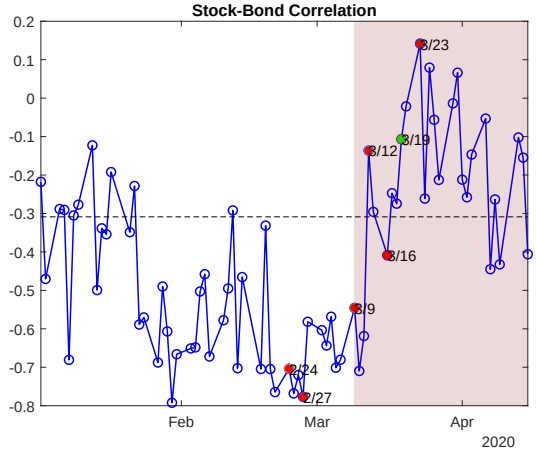
Equity Markets in 2020



1/23: Wuhan lockdown.
2/04: Covid19 test approved by FDA.
2/12: CDC: Faulty virus tests.
2/24: Virus widely spread outside China.
2/25: Trump: USA under control.
2/26: Trump: Pence leads virus response.
2/27: CDC: test criteria revised.
3/03: Fed: rate cut by 50 bps.
3/10: President Xi visits Wuhan.
3/11: Trump: TV address.
3/12: Fed: injects $1.5T via term repo.
3/13: Trump: national emergency.
3/15: Fed: rate to zero and $700B QE.
3/17: Fed: CP funding & PD credit facility.
3/18: Fed: MMMF liquidity facility.
3/23: Fed: Infinite QE announced at 8 am.
3/25: Senate: $2T relief bill passed 96-0.

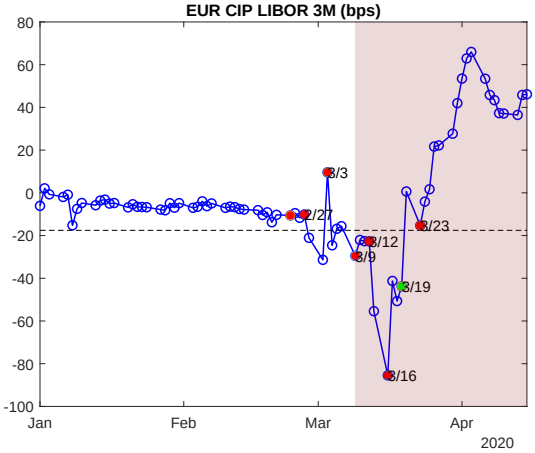
The U.S. Treasury Market in 2020

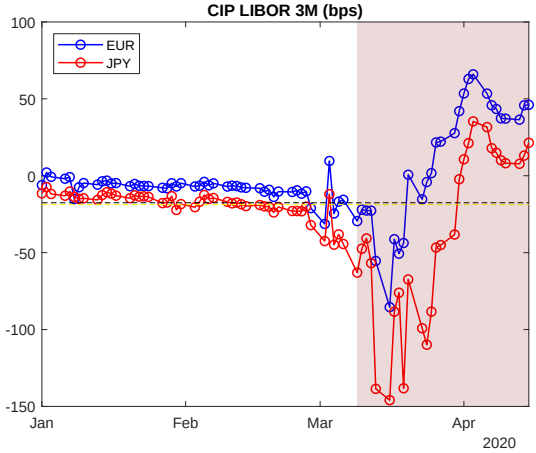




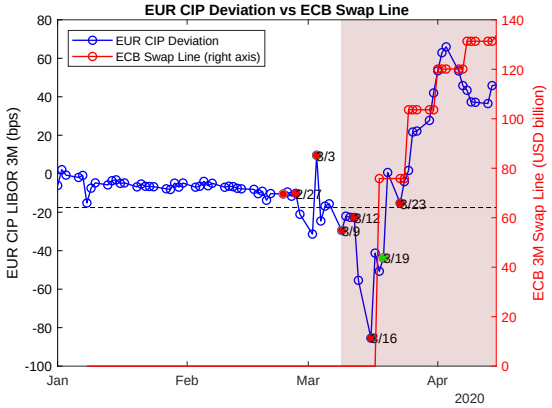
Source: *"Comovements in Global Markets and the Role of U.S. Treasury"* by Hu, Jin, and Pan (2023).

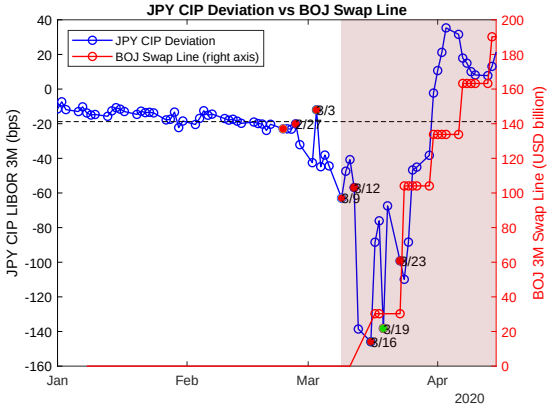
The CIP Deviations in 2020





The Impact of the Central Bank Swap Lines on the CIP Deviations





With/Without Access to the Swap Line

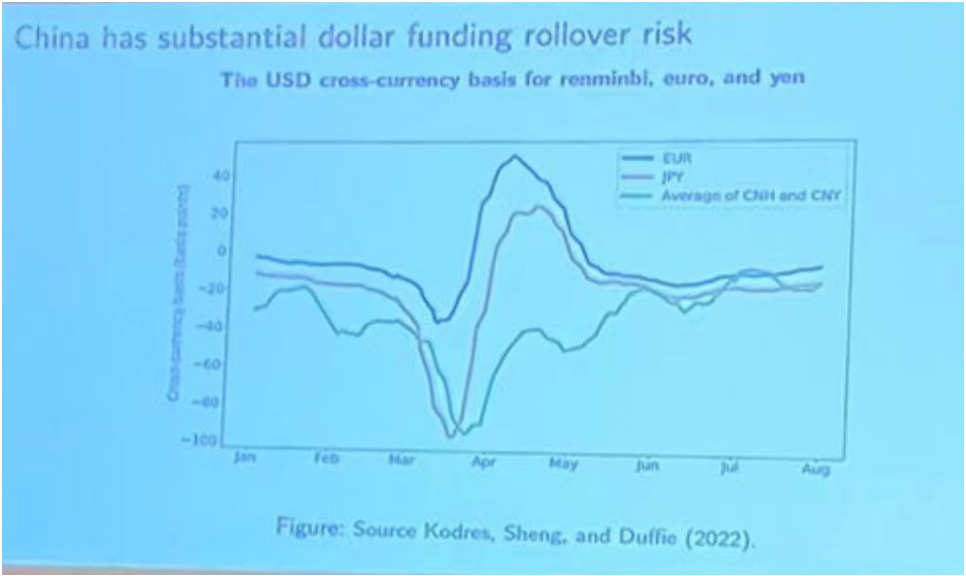


Figure: Source Kodres, Sheng, and Duffie (2022).

With/Without Access to the Swap Line

China has substantial dollar funding rollover risk

The USD cross-currency basis for renminbi, euro, and yen

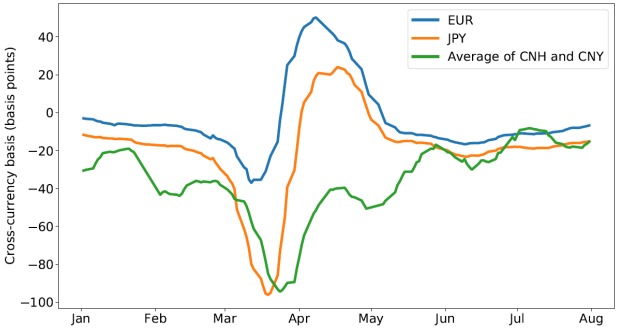
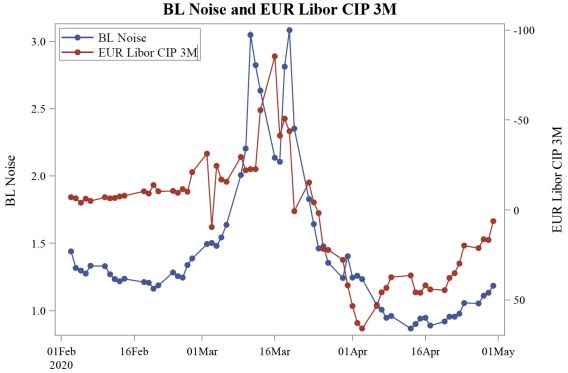
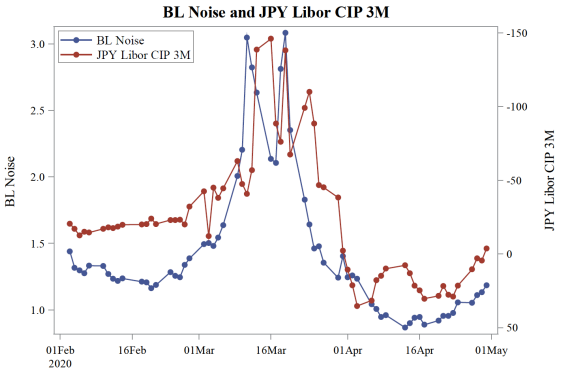


Figure: Source Kodres, Sheng, and Duffie (2022).

In 2020, "Noise" in UST Leads "Noise" in Currency

During crises, the retreat of the arbitrage capital diminishes the force of arbitrage, exposing the underlying dislocation (e.g., old/new bonds, currency forwards and swaps):





- Noise in Currency: CIP Deviations (in red).
- Noise in UST: Hu, Pan, and Wang (2013). (Bloomberg's UST Liquidity in blue.)